

AMDISK-III, III(B)

3" DISK DRIVE

USER'S MANUAL



The FCC Wants You to Know...

This equipment generates and uses radio frequency energy. If not installed and used properly, that is, in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception.

It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, you should consult the dealer or an experienced radio television technician for additional suggestions. You may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems*.

This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Warning

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	How to get the most from your Amdisk-III	1
2.0	Key Features	1
3.0	Power Source	2
4.0	Cautions on Use	3
5.0	Location of Operator Controls	4
6.0	Operation	5
7.0	Specifications	6
8.0	Amdisk-III Compact Floppy Diskette	8
	1) Disk Diagram	8
	2) For best performance by the Diskette	9
	3) Handling Precautions	9
	4) Storage Instructions	9
9.0	TECHNICAL APPENDIX	10
9.0.1	Interfacing to the IBM Personal Computer	10
9.0.2	Interfacing to the Radio Shack Model III	11
9.0.3	Interfacing to the Radio Shack Color Computer	11
9.0.4	Interfacing to other Computers	13
9.0.5	Reconfiguring the Amdisk Drive Select Codes	14

1.0 INTRODUCTION

The AMDISK-III 3" Disk Drive is plug compatible with the IBM Personal Computer (Model 5150 Version 1.0) through a 37 pin D connector.

The AMDISK-III provides excellent storage capability at a competitive price.

The AMDISK-III utilizes 3" cartridges constructed of hard plastic for improved durability vs. 5¼" diskettes.

*The AMDISK-III is compatible with operating systems which can access Tandon 5¼" or Shugart SA-400 Series drives.
(Example: Radio Shack TRS DOS)

2.0 KEY FEATURES

- The AMDISK-III 3" Disk Drive offers high reliability and accommodates two diskettes for up to 500k bytes of on-line, unformatted storage capacity. By flipping the diskettes, and additional 500k bytes can be accessed.
- The AMDISK-III is compatible with standard 5¼" drives in terms of recording format, data transfer rate, and disk rotation speed.
- The hard plastic 3" compact floppy diskettes have a protected, hinged cover and a "Write Protect" mechanism.

*Another version, called the AMDISK-III (B) is equipped with a 34 pin connector

**Formatted storage dependent upon particular host computer's operating system

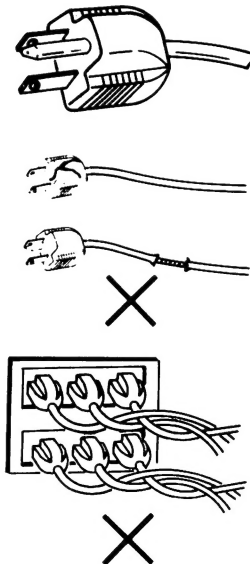
3.0 POWER SOURCE

This drive is designed to operate on 115 volts Hz, AC house current.

NEVER CONNECT THE DRIVE TO OTHER THAN THE SPECIFIED VOLTAGE, TO 50 Hz OR TO DIRECT CURRENT.

NOTE:

- This drive is equipped with a polarized alternating current line plug. As a safety feature, this plug will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, or if the plug should fail to fit, contact an electrician to inspect your outlet. DO NOT DEFEAT the safety purpose of the polarized plug.
- Should the power cord or plug become damaged or frayed, unplug this drive from the wall outlet and refer servicing to qualified service personnel.
- Do not overload wall outlets and extension cords as this can result in fire or electric shock.



4.0 CAUTIONS ON USE

- **TAKE GOOD CARE OF THE POWER CORD**

To prevent damage, do not stuff the power cord under the set, or hold the unit by the power cord. It is dangerous to use the power cord while it is damaged. Be sure to pull the power cord out by holding the plug.

- **CAUTIONS ON POWER VOLTAGE**

When the power voltage is extremely high or low, it may cause trouble or may limit optimum performance. Consult your dealer if this situation should arise.

- **KEEP WATER OUT**

When water or liquid enters the set, danger can result. Should this occur, immediately remove the plug and contact your dealer.

- **KEEP IN A WELL-VENTILATED PLACE**

Ventilation holes are provided in the cabinet to prevent the temperature from rising. Do not: 1) Place the unit in a poorly ventilated location, 2) Cover the unit with a cloth or, 3) Place the unit on a carpet as this clogs the ventilation holes.

- **HIGH TEMPERATURE CAUSES TROUBLE**

Avoid placing the unit in direct sunshine, near a heating appliance, or where lamp soot will directly contact the unit such as in a kitchen.

- **WHEN BEHAVIOR IS ABNORMAL**

When any abnormal sound, odor, or smoke is detected, turn the power switch off, pull the power plug from the socket, and contact your dealer.

- **DO NOT LET FOREIGN MATTERS IN UNIT**

When metals or inflammables are inserted or dropped through the ventilation hole, they can cause trouble such as electric shock, fire, etc.

- **KEEP IN A PLACE WITH MINIMUM MOISTURE OR DUST**

Do not place the unit in a place with much moisture or dust such as inside a bathroom or near a washing machine.

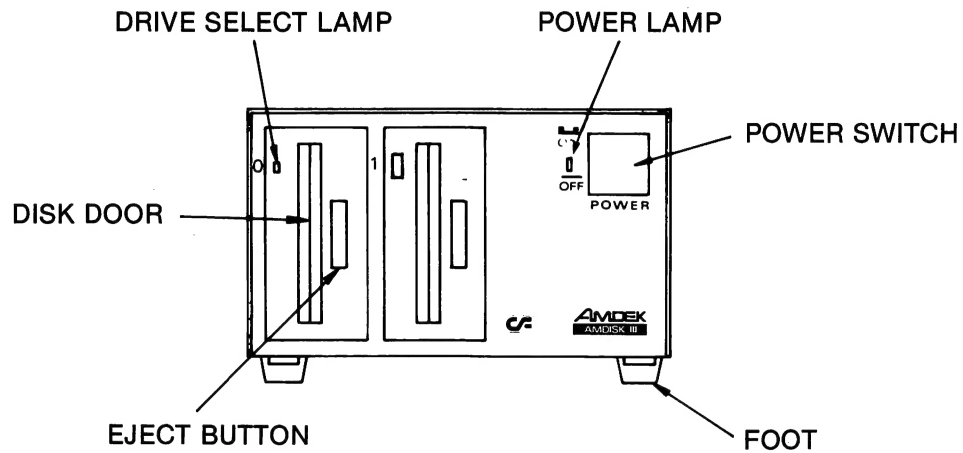
- **WHEN THE UNIT IS NOT USED FOR A LONG TIME**

Be sure to remove the power plug from the socket when you are going on a trip, etc., and the unit will not be used for a long time.

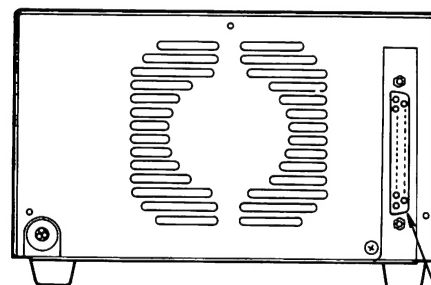
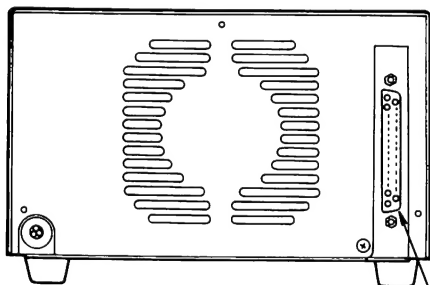
- **DO NOT APPLY A SHOCK**

5.0 LOCATION OF OPERATOR CONTROLS

FRONT VIEW



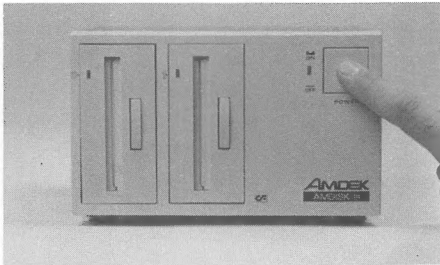
REAR VIEW



6.0 OPERATION

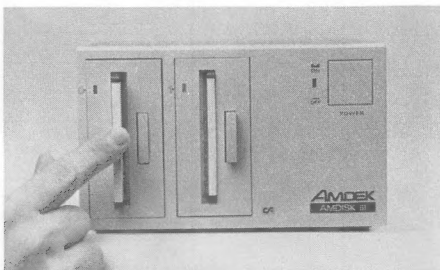
Operation of the AMDISK-III Micro-FLOPPY DISK DRIVE is discussed below.

- ① Turn the power ON



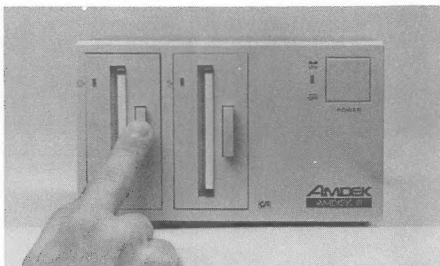
Power is turned on when the Power Switch is depressed.

- ② Insert the Compact Floppy Diskette



Hold the label area of the diskette and then insert it through the door of the disk drive.

- ③ When you finish the operation



- 1) Press the Eject Button to remove the diskette
- 2) Press the power switch again to turn off the power.

7.0 SPECIFICATIONS

1. Electrical rating
 - (1) Voltage : 115V \pm 10%
 - (2) Frequency : 60 Hz
 - (3) Input : 0.7A
2. Dimensions (inch):
(W) 7.18 \times (H) 4.33 \times (D) 8.66
3. Weights (Lbs Oz):
Appr. 11.3
4. Specifications

NOTE: Single Head per Drive

Items		Unit	Single Density			Double Density		
CAPACITY	Unformatted							
	Per Disk	Bytes	250K			500K		
	Per Surface	Bytes	125K			250K		
	Per Track	Bytes	3125			6250		
	Formatted							
	Bytes/Sector		128	256	512	256	512	1024
	Sectors/Track		16	9	5	16	9	5
	Per Disk	Bytes	164K	184K	205K	328K	369K	410K
	Per Surface	Bytes	82K	92K	102K	164K	184K	205K
	Per Track	Bytes	2048	2304	2560	4096	4608	5120
MEDIA	Record Surfaces		2			2		
	Cylinders		40			40		
	Tracks		80			80		
RECORDING	Encoding Method		FM			MFM		
	Max Recording Density	Bpi	4473			8946		
	Track Density	Tpi	100			100		
	Transfer Rate	bits/sec	125K			250K		

Items		Unit	Single Density	Double Density
ACCESS TIME	Average Access Time	msec	55	
	Track to Track	msec	3	
	Settling Time	msec	15	
	Average Latency Time	msec	100	
	Head Load time	msec	—	
	Motor Start Time	sec	0.7 sec min	
	Disk Speed	rpm	300	
DIMENSIONS	W X H X D	mm	(W) 7.18 \times (H) 4.33 \times (D) 8.66	
POWER	DC12V		12V \pm 5%	0.5A Typical
	DC5V		5V \pm 5%	0.5A Typical
RELIABILITY	Error Rates			
	Soft Error		10 ⁻⁹	
	Hard Error		10 ⁻¹²	
	Seek Error		10 ⁻⁶	
ENVIRONMENTAL LIMITS	Ambient Temperature	°C	5 \sim 43	
	Relative Humidity	%RH	20 \sim 80	
	Maximum Wet Bulb	°C	29	
	Media		3-inch Cartridge	
DRIVE INTERFACE			Plug Compatible with 5.25 inch FDD	

5. EXTERNAL INTERFACE

A) Connector: 37 - pin "D" shell connector (IBM Personal Computer) AMDISK-III

1) Signals

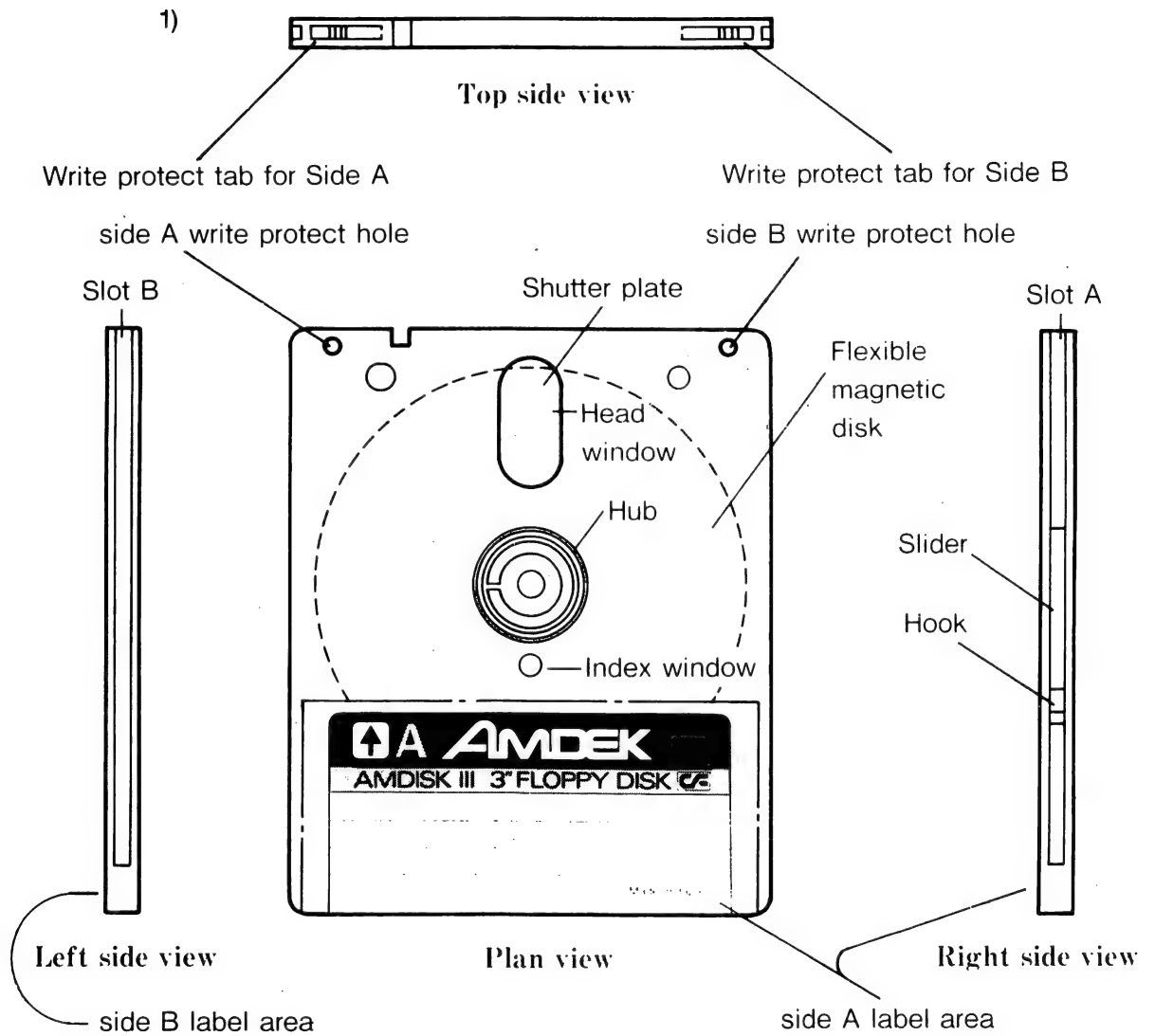
Pin NO.	Signal	Pin NO.	Signal
1-5	Unused	13	Write data
6	Index	14	Write enable
7	Motor enable C	15	Track 00
8	Drive select D	16	Write protect
9	Drive select C	17	Read data
10	Motor enable D	18	Not used(AMDISK-III)
11	Direction	19-20	Unused
12	Step pulse	21-37	GND

B) Connector: 34 Pin Connector AMDISK-III (B)

1) Signals

Pin NO.	Signal	Pin NO.	Signal
2	Unused	20	Step
4	In use (option)	22	Write data
6	Drive Select 3	24	Write gate
8	Index	26	Track 00
10	Drive Select 0	28	Write Protect
12	Drive Select 1	30	Read data
14	Drive Select 2	32	Unused
16	Motor-on	34	Ready
18	Direction	1-33	Ground

8.0 THE AMDISK-III COMPACT FLOPPY DISKETTE



2) For the best performance from the Diskette

- This compact floppy diskette is usable on both sides.
- When using the diskette on side A, to access side B simply flip the diskette over as you would in a cassette player. (Note: LED on drive will be green for side A and red for side B). (Arrow at bottom points left for active side)
- To prevent further writing of data to a diskette, open the Write Protect holes by sliding the write protect tabs with the tip of a ballpoint pen or equivalent implement.
- Correct, straight insertion into the drive is essential.

3) Handling precautions

- Do not attempt to open the shutter and touch the diskette surface.
- Do not forcibly press the shutter plate or apply excessive force to the opening/closing slider.
- Do not forcibly bend the diskette.
- A deformed or contaminated hub may cause errors; always keep the hub clean.
- Do not use thinner, alcohol or Freon to clean the diskette.
- Do not use an eraser.
- Avoid eating or smoking around the compact floppy diskette.

4) Storage instructions

- When storing after use, make certain to house the diskette in its case.
- Do not store the diskette in locations exposed to excessive heat, humidity, or direct sunlight.
- Avoid storing in locations where strong magnetism is generated.
- Avoid storing in a location liable to cause dust or dirt accumulation.

9.0 TECHNICAL APPENDIX

9.0.1 Interfacing to the IBM Personal Computer

The rear panel of the Amdisk-III has a 37 pin "D" connector for direct mating to the IBM Personal Computer. All that is required for use is attaching the supplied cable to the PC and the reconfiguring the PC to recognize the two external drives.

To reconfigure the PC for additional drives, please refer to the IBM "Guide to Operations" manual section 5 (Option Installation). This section depicts the proper way to remove the PC cover and identifies the location of the IBM configuration switches (pages 5-11).

To configure the PC for the external drives you must set switch positions 7 & 8 of Switch 1 (located on system board) to the off state. This selects the PC to recognize four drives (2 internal, 2 external). The PC must be set this way even if your system has only 1 internal drive. For systems with only 1 internal drive, any attempt to access drive "B:" will produce an error.

Reassemble your PC and attach the supplied cable to both the PC and the Amdisk-III, and the system is ready for use.

Please note that the IBM diagnostics version 1.02 will incorrectly report that the Amdisk drives are 320K drives. Later revisions, such as the Advanced Diagnostics, will report correctly that the Amdisk drives are 160K drives. (The diskettes are designed to be flipped over manually thereby supplying a total of 320K bytes)

When using the Amdisk-III with PC DOS Version 1.1 and 320K internal drives remember to use the /1 option when copying disks of different storage density or formatting the Amdisks. (Please read the DOS 1.1 manual sections referring to single, double-sided drive (operations)).

9.0.2 Interfacing to the Radio Shack Model III

Another version of the Amdisk-III is equipped with a 34 pin connector which allows increased flexibility in interfacing to a variety of computer systems. This version is referred to as the Amdisk-III(B).

Using the Amdisk-III(B) with the Model III requires the use of an AMD-2 interface cable. Note that the TRSDOS operating system will only recognize the external drives (:2 and :3), if two internal drives are present (:0 and :1).

To install the external cable to the Model III refer to the diagrams on page 2 of the Model III operation manual. The AMD-2 cable should be attached to the external drive connector so that the cable leaves the connector towards the BACK of the Model III [the red stripe on the cable towards the right side of the computer (front view)]. When connecting the cable to the Amdisk-III(B) rear panel, the red stripe should be at the bottom of the connector with the cable leaving the left side of the Amdisk case.

After connecting the cable, turn the power ON to the Amdisk-III(B) (Model III power OFF). If both drive select lights illuminate, immediately turn the power OFF. This is an indication that the disk cable was not installed properly (one of the connectors is backwards). Please check your connections.

9.0.3 Interfacing to the Radio Shack Color Computer

The Amdisk-III(B), with the proper cable, may be used with the Radio Shack Color Computer disk controller and disk drives. Three cables are available: The AMD-2 for use with the color computer and no 5¼" *Radio Shack drives, the AMD-CC3 for use with the Color Computer and one 5¼" Radio Shack drive, and the AMD-CC4 for use with the color computer and two 5¼" Radio Shack Drives. Note that these cables are for use with the Color Computer disk drives ONLY, disk controllers made by companies other than Radio Shack will probably require one of the "Universal" cables described in Section 9.0.4. Please note also that when using the AMDISK-III (B) with two Radio Shack 5¼" Drives, the Amdisk Drives must be configured as 1 and 2.

To install the AMD-CC3 or AMD-CC4 cables, locate the end of the cable that has the 34 pin edge card connector (the mating connector to the Color Computer Controller). This connector should be attached to the Color Computer so that the cable leaves the connector from the bottom (red stripe on the cable towards the back of the color computer). When attaching to the Color Computer disk drives the red stripe should be at the bottom of the disk drive edge connector. Please note that the Color Computer disk drive 0 must be the first Color Computer disk drive on the cable (closest to the computer) in systems using two Color Computer drives). The Amdisk-III(B) connector should also be attached with the red stripe towards the bottom and the cable leaving the left edge of the connector. When using the AMD-2 cable, also make sure that the cable leaves the computer with the red stripe toward the back of the computer and plugs into the Amdisk-III(B) with the red stripe at the bottom of the connector.

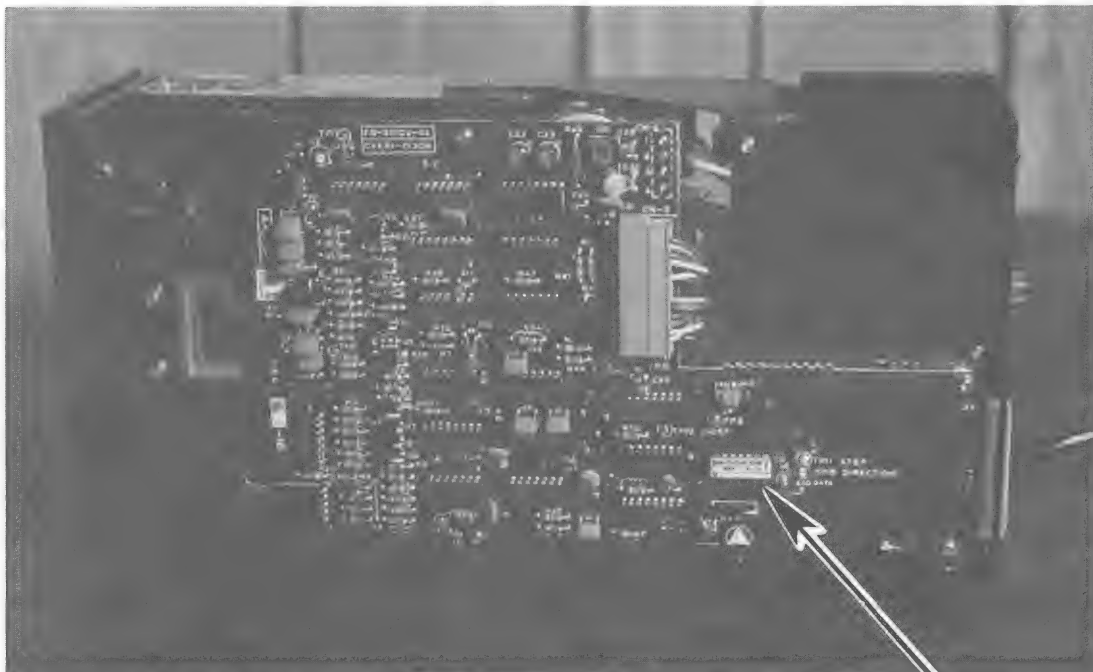
**Radio Shack or equivalent 5¼" drives*

In addition to the proper cable, the disk drive select code for each Amdisk drive (two) may need to be changed to reflect the proper configuration of your system. The Amdisk-III(B) drives are shipped with the select codes of 0 and 1, but may be changed to codes 1 and 2 or 2 and 3. (If your system has 1 Color Computer drive you will want the Amdisk drives to be 1 and 2, for two Color Computer drives you will want codes 2 and 3). If you need to change the drive select codes please refer to Section 9.0.5 titled "Reconfiguring the Amdisk Drive Select Codes".

Disk systems that connect multiple drives along one cable (such as the Color Computer) are called "Daisy Chained Systems". To reduce noise and improve performance on such cables the last disk drive in the chain is "terminated". "Termination" is done by adding resistors to ground. Your Color Computer disk drive system includes termination which is no longer needed and may even degrade system reliability when used with the Amdisk-III(B) (which includes its own termination). You may choose to experiment with your new disk system, if you have no problems reading or writing, you may not need to remove the termination from your Color Computer drive.

If you do experience problems, to remove the termination block from a Color Computer disk drive, (from drive #1 on a two drive system or drive #0 on a single drive system), first unplug the drive from the wall outlet and from the interface cable. Remove the Color Computer disk drive cover (4 screws) and turn the disk drive so the main electronic board faces you, (drive door to the left, rear connector to the right: See Photo 1 below). Near the rear connector (lower right of the board) you will find an integrated circuit in a socket: See arrow to Photo 1. This is the only socket on the board and it is actually a resistor package used to terminate the cable. To cancel the termination, simply remove this resistor pack, replace the disk drive cover, and the task is completed.

Photo 1



Resistor Pack

9.0.4 Interfacing to other Computers

The Amdisk-III(B) disk drives may be used on any computer that currently has a 5¼" soft sectored disk controller and uses the industry standard 34 pin ribbon cable for drive connections. Amdek produces a number of cables to connect its Amdisk-III(B) unit and up to 2, 5¼" drives to a standard 34 pin card edge connector. For compatibility with your computer please contact Amdek for information on the proper cable. The cables currently available are:

PART #	USAGE
AMD-2	34 pin edge connector to Amdisk-III(B)
AMD-2F	34 pin female connector to Amdisk-III(B)
AMD-3	34 pin to Amdisk-III(B) with one 5¼" disk drive edge connector.
AMD-4	34 pin to Amdisk-III(B) with two 5¼" disk drive edge connectors.
AMD-CC3	Radio Shack Color Computer cable with one 5¼" disk drive edge connector.
AMD-CC4	Radio Shack Color Computer cable with two 5¼" disk drive edge connectors.

NOTE: the Amdisk-III(B) connector is the last connector on the cable and pin #1, the red striped cable strand, attaches at the bottom of the Amdisk-III(B) rear panel connector.

The Amdisk-III(B) unit is shipped with the Amdisk drives configured to respond to the computer's drive select 0 and 1. If your system requires the Amdisk's response to different drive select codes you will need to reconfigure the Amdisk drives. Please read the following section "Reconfiguring the Amdisk drive select codes".

9.0.5 Reconfiguring the Amdisk Drive Select Codes

When shipped from the factory the Amdisk-III(B) disk drives are configured to drive select codes 0 and 1. Your system may require you to change the select codes for proper operation.

To change the select codes of the Amdisk drives, unplug the Amdisk-III(B) unit from the wall outlet and disconnect the interface cable. Remove the drive cover (5 Phillips screws), and turn the unit so the drive doors are to the right and you are facing the drive electronics of drive #0, (See Photo 2 below). You will see two sets of small switches on the left edge of the drive electronics board, immediately to the right of the edge connector that leads to the rear panel, (See Photo 3 below). The switch selection with 5 switches is used to choose the drive select code, (See Photo 4 following page). The drive should have switch #2 to the right (ON) and the others to the left (OFF) (NOTE: In photo 4, switch #3 is on, the others are off) switch #2 selects the drive to respond to drive select 0 (Drive "A" in some systems). The individual switches in this section are defined as:

<u>Switch #</u>	<u>Usage (Switch ON)</u>
1	Always select drive
2	Select Drive as #0 or "A"
3	Select Drive as #1 or "B"
4	Select Drive as #2 or "C"
5	Select Drive as #3 or "D"

NOTE 1: Only 1 switch should be set to ON at a time

NOTE 2: Some systems refer to drives 0, 1, 2, 3 as 1, 2, 3, 4

You should turn switch #2 OFF and turn the proper switch ON corresponding to the select code you need. Drive #1 may be programmed in the same manner, you will need a long screwdriver or narrow ball point pen to reach the drive #1 switches, (See Photo 5 on the following page). Once you have set the proper switches, replace the drive cover, attach the cable, and the Amdisk-III(B) is ready to use.

Photo 2

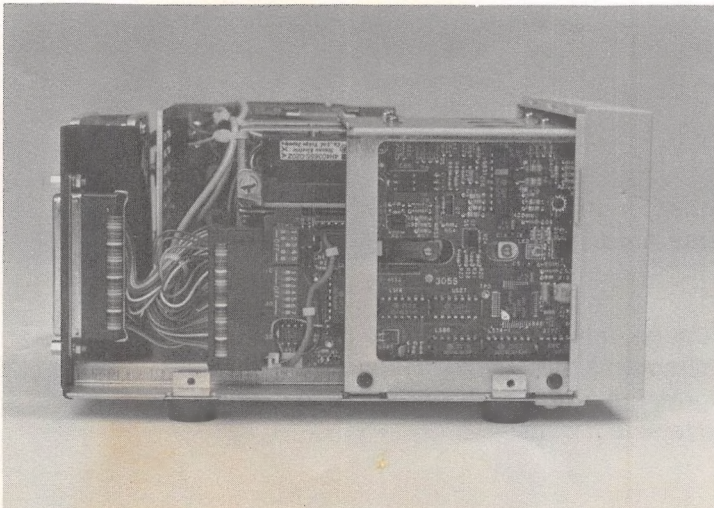


Photo 3

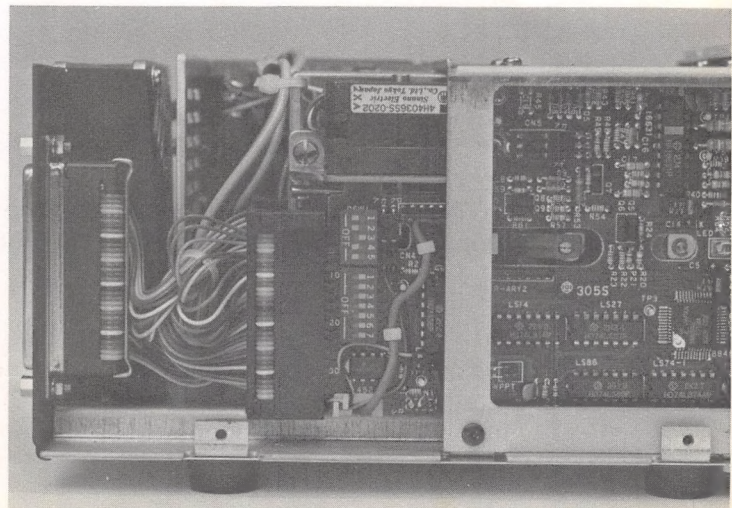


Photo 4

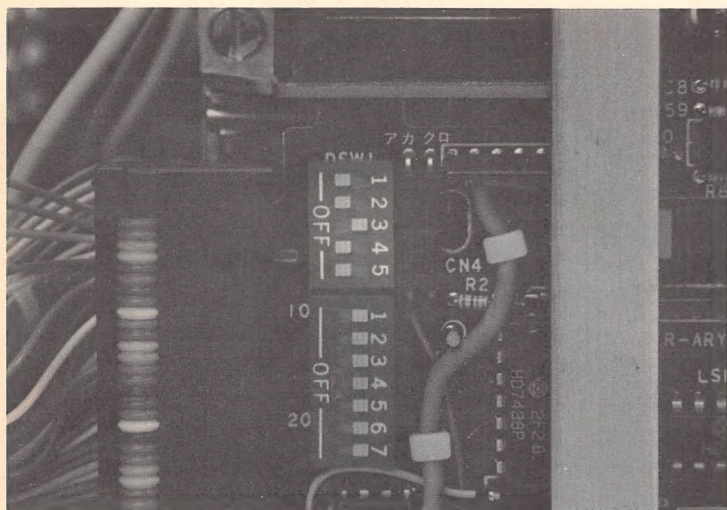
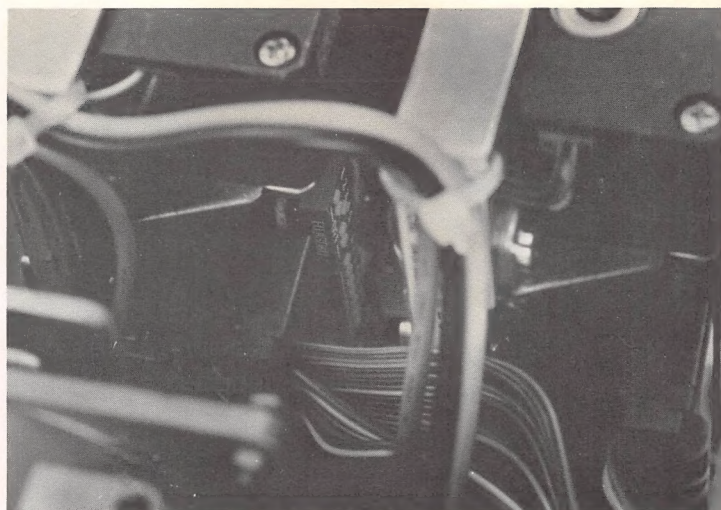


Photo 5





2201 Lively Boulevard • Elk Grove Village, Illinois 60007 • (312) 364-1180 • TLX: 25-4786